REMARKS

This application contains claims 1, 3, 5-19, 21 and 22. Claims 20 and 34-51 were withdrawn in response to a restriction requirement (but are presented hereinabove in accordance with the Revised Amendment Practice required by 37 CFR 1.121). Claim 1 has been amended. No new matter has been introduced. Reconsideration is respectfully requested.

Claims 1, 3, 5-11, 21 and 22 were rejected under 35 U.S.C. 103(a) over Maekawa (EP-0,764,478-A1) in view of Engelsberg et al. (U.S. 5,531,857) Vaught (U.S. 5,023,424) and Maurer (U.S. 5,634,230). Applicant has amended claim 1 in order to distinguish the present invention over the cited art.

Maekawa describes a method and apparatus for cleaning a semiconductor substrate, using a swing arm to move a rotatable cleaning unit over the substrate (col. 5, lines 1-8). The cleaning unit includes a cleaning member, which is used, for example, to scrub the surface of the substrate while a nozzle ejects a cleaning liquid onto the surface (col. 5, lines 24-29, and col. 6, lines 2-4). Engelsberg, Allen and Vaught all describe methods and apparatus for removing contaminants from a surface using high-intensity radiation. Vaught, in addition, describes the use of a particle position detector to locate the position of particles on a wafer (col. 3, lines 55-57). After detection of the particles in a particle detector station, the wafer is transported to a particle removal station for cleaning (col. 3, lines 47-50). Maurer also describes an automated cleaning assembly in which a photomask is moved between an inspection position and a cleaning position (col. 3,

lines 54-56). After the photomask has been inspected, a probe is moved over the locations of particle contaminants found during inspection in order to remove the contaminants (col. 4, lines 3-16).

Claim 1 as amended recites an arrangement wherein a chuck is used to position a substrate within a processing chamber for scanning by a particle localization unit. The same chuck, in the same chamber, is used to position the substrate with respect to an optical arm so that a beam of energy is directed by the arm to impinge on particle locations determined by the localization unit. The claim has been amended to state that the particle localization and particle removal functions are carried out simultaneously. After the particle localization unit has determined locations of particles in a first region of the surface, the optical arm removes these particles while the particle localization unit scans a second region of the surface. The simultaneous execution of particle localization and particle removal functions is shown in Figs. 5B and 10 of the present patent application and is described clearly in the specification on page 17, lines 1-19. As noted in the specification, this approach has the advantage of utilizing the inspection time more efficiently, so that the throughput of the apparatus is enhanced.

A system capable of simultaneous inspection and cleaning, as recited in amended claim 1, is neither disclosed nor suggested by the prior art. Although Vaught describes the use of a particle detector in conjunction with a laser-based particle removal station, these two elements are clearly separate units, which operate during separate, successive time periods, as noted above. (See also Vaught's Fig. 1 and col. 6, lines

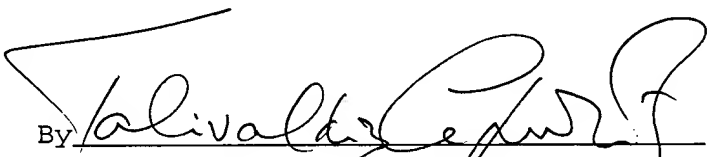
31-38.) Similarly, Maurer describes a serial process, in which the photomask is first inspected in an inspection position, and subsequently cleaned in a cleaning position (col. 3, lines 66-67). A person of ordinary skill in the art would not have been motivated to modify either Vaught's or Maurer's system in order to perform simultaneous inspection and cleaning because of the technical difficulties involved in performing both of these delicate, precision operations at the same time, and because of the risks of damage to the surface of the substrate and to the inspection station. These technical difficulties and risks are resolved by use of the novel cleaning arm that is described in the present patent application.

Thus, Applicant respectfully submits that claim 1 as amended is patentable over the cited art. In view of the patentability of claim 1, claims 3, 5-11 and 19-22, which depend from claim 1, are believed to be patentable, as well.

Claims 12-18 were rejected under 35 U.S.C. 103(a) over Maekawa in view of Engelsberg and Vaught and further in view of Allen (U.S. 4,987,286). In view of the patentability of claim 1 as amended, however, claims 12-18, which depend from claim 1, are believed to be patentable, as well.

Applicant believes the amendments and remarks presented hereinabove to be fully responsive to all of the grounds of rejection raised by the examiner. In view of these amendments and remarks, applicant respectfully submits that all of the claims in the present application are in order for allowance. Notice to this effect is hereby requested.

Respectfully submitted,

January 13, 2004 By 

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